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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,003	03/16/2004	Shinpei Iijima	8017-1130	1592
466	7590	12/08/2005	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			GARCIA, JOANNIE A	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/801,003	<b>Applicant(s)</b> IIJIMA ET AL.	
	<b>Examiner</b> Joannie A. García	<b>Art Unit</b> 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa (U.S. Patent 6,873,002), in combination with Iijima et al (US 2001/0038114 A1).

The rejection is maintained as stated in the Office Action mailed 06-03-05, and as stated below.

Applicant argues that Nishikawa does not teach the removing step between the depositing and growing steps so that the growing step will create a film that separates the TiN from the TaO. However, Nishikawa discloses depositing a Ru second conducting material 29 by a sputtering method, which is more difficult to oxidize than said first conducting material, on at least part of the first insulating film 22/25 adjacent to a base of said cylindrical crown structure, a bottom of an opening of said cylindrical crown structure, and a side wall of said cylindrical crown structure (Figure 3H, and Column 6, lines 1-10), removing by etching said second conducting material on said first insulating film, (Figures 3J-3K), and forming an accumulation electrode of said capacitor element, which is obtained by covering said first conducting material with said second conducting material, by growing a film by CVD of said second conducting material deposited on the bottom of the opening of said cylindrical crown structure and the side wall of said cylindrical crown structure while using said second conducting material as a seed layer after having removed said conducting material from said first insulating film (Figures 3L-3M, and Column 6, lines 1-11). Therefore, creation of a film that separates the TiN from the TaO would have been achieved in the process of Nishikawa (Figure 3M).

Applicant argues that Iijima et al does not teach removing the Ru from the insulator adjacent to the base of the crown structure between the sputtering and growing steps. However, Iijima et al is not relied upon for that purpose. Iijima et al is relied upon for forming a second insulating film 33 as a dielectric insulating film of a capacitor element on a surface of an accumulation electrode 28 deposited on a surface of a first insulating film 24, and wherein said accumulation electrode is obtained by covering a first conducting material 29 with a second conducting material, by growing a film by CVD of said second conducting material deposited on a bottom of an opening 26 of said cylindrical crown structure and a side wall of said cylindrical crown structure while using said second conducting material as a seed layer (Figures 38, and 41, and Paragraph 0200), wherein the second insulating film 33 is made of  $Ta_2O_5$  using a thermal CVD method with  $(Ta(OC_2H_5)_5)$  as a starting gas and oxygen as an oxidizing gas agent, having a thickness of 10 nm at a temperature of 440 degrees Celsius (Paragraph 0205). It would have been within the scope of one of ordinary skill in the art to combine the teachings of Nishikawa and Iijima et al, to enable the formation step of the oxygen-containing  $Ta_2O_5$  second insulating film 29 of Nishikawa to be performed, by employing the disclosed oxygen introduction step Iijima et al.

Claim 15 is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joannie García whose telephone number is (571) 272-1861. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JAG

December 5, 2005

GFourson

Primary Examiner



George Fourson  
Primary Examiner  
Art Unit 2823